South Carolina Prepares: Pandemic Influenza

An Assessment of Readiness and Plan for Improvement

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Table of Contents

Executive Summary

"The pandemic clock is ticking, we just don't know what time it is."
-Dr. Edgar Marcuse of the University of Washington School of Medicine.

Experts at the World Health Organization (WHO) and Centers for Disease Control and Prevention believe that the world is now closer to another influenza pandemic than at any time since 1968, when the last of the previous century's three pandemics occurred. Historically, about every 30 years, or three times a century, an outbreak of influenza occurs with a new virus that results in rapid worldwide spread of the disease, causing a pandemic.

Planning for a pandemic requires that South Carolina's communities prepare to be self sufficient, to identify and use local resources to last throughout many weeks of the spread of the disease. In a pandemic, all areas of the country will be affected by the pandemic at the same time. There will be few federal resources on which to count and it is estimated that approximately 30%, or over 1,200,000 of South Carolina's citizens would be stricken.

In 1999, shortly after the first reports of human cases of a highly pathogenic strain of avian influenza in Hong Kong, South Carolina began developing a draft response plan for pandemic influenza. The state emergency operations plan for pandemic influenza was published in November 2004. In November 2005, the national pandemic influenza plan was released and preparedness efforts have intensified across the country. In South Carolina, state and local planning summits have been held to draw attention to the critical and comprehensive preparedness plans needed for a pandemic. Regional and county pandemic influenza plans have been drafted and exercised. Assessments of state and local capabilities for response have been conducted.

South Carolina Department of Health and Environmental Control (SCDHEC) staff have presented educational programs and have begun a media campaign to educate partner organizations and the general public about the effects of a pandemic, how to minimize its effects and how to plan for it. SCDHEC is working with many healthcare partners to prepare for the surge in medical care needs that can be expected in a pandemic and to identify additional medical resources and alternate health care sites to cope with the huge swell of hospitalizations and persons seeking medical attention during a pandemic. The state is stockpiling antiviral medications, personal protective equipment, infection control supplies, medical supplies and equipment for use in a pandemic. Influenza surveillance and monitoring, activities are being stepped up.

Non-recurring federal funding has been used to boost state planning efforts. This federal funding has supported the surveillance, stockpiling, planning, exercising and education efforts. During 2006-2007, SCDHEC pandemic preparedness efforts will continue to focus on planning, providing information to the public and planning partners, preparing to implement medical and social measures to minimize the effects of a pandemic, and stockpiling antiviral medications and medical equipment.

Assessment of South Carolina's Ability to Cope with a Major Influenza Outbreak

The Threat of Pandemic Influenza

Each season, the "normal" flu affects the population in varying degrees of severity. Most of the fatalities from illness during the normal flu season are among the very old, the very young, people with chronic diseases and those with compromised immune systems. Historically, about every 30 years, or three times a century, an outbreak of influenza occurs with a virus that is new to the human immune system, resulting in the rapid worldwide spread of the disease and causing, by definition, a pandemic. In about one-third of these outbreaks (or once a century), a virus emerges which is particularly virulent, particularly contagious, and particularly lethal, such as the "Spanish Flu of 1918."

During the 20th Century, the world experienced three influenza pandemics. The flu outbreaks of 1957 and 1968 (Asian Flu and Hong Kong Flu, respectively) were minor pandemics that killed tens of thousands of Americans, and millions across the globe. However the Spanish Flu of 1918 killed 550,000 Americans and approximately 100 million people worldwide in less than eight months.

Experts at the World Health Organization (WHO) and Centers for Disease Control and Prevention believe that the world is now closer to another influenza pandemic than at any time since 1968, when the last of the previous century's three pandemics occurred. WHO uses a series of six phases of pandemic alert as a system for informing the world of the seriousness of the threat and of the need to launch progressively more intense preparedness activities. Each phase of alert coincides with a series of recommended activities to be undertaken by WHO, the international community, governments, and industry. Changes from one phase to another are triggered by several factors, which include the epidemiological behavior of the disease and the characteristics of circulating viruses. The world is presently in phase 3: a new influenza virus subtype is causing disease in humans, but is not yet spreading efficiently and sustainably among humans.

What Might a Pandemic Look Like in South Carolina?

An influenza pandemic affects between 30% and 50% of the population. If 30% of South Carolina's population were stricken by a pandemic, 1,200,000 would seek medical assistance and up to 17,000 would need hospital care. There could be from 2,000 to 5,000 deaths, and the effects of a pandemic would last six weeks or more in a community.

What would this mean to our state?

Our already overburdened healthcare system would not be able to handle the enormous influx of people seeking medical care and needing hospitalization. Hospitals would not have enough beds, ventilators, or other medical supplies to care for the ill. This drain on the healthcare system would be compounded by physicians, nurses and other hospital staff being stricken with the illness, or staying at home to care for loved ones who are ill.

The federal government has estimated that 40% of staff within government entities and private sectors may be absent from work for about two weeks during the height of a pandemic. Employees may be out of work because they are sick, caring for sick family members or for children who are out of school, or they may be under quarantine. Consider the implications of this rate of absenteeism on the ability of businesses and governmental entities, such as public works and fire/police/emergency medical services to continue to provide essential services. Absenteeism may affect public utilities such as water and electricity, medical care and public health services, education, and care for special needs populations. Food supply (as well as other goods) may be affected due to the unavailability of truck drivers to drive for one to two weeks.

In a pandemic, it may become necessary for local governments to close schools to prevent the spread of the disease. Depending on the nature of the pandemic, school closures might last for several weeks. If this measure is taken, then day care centers must also close in order to contain the disease. Employees will need to stay home to care for their children. Other steps to contain the spread of the disease might include canceling public events such as football games or concerts, closing public recreation facilities, closing office buildings and shopping centers. Travel may be restricted.

Because of the highly contagious nature of a pandemic, churches may need to provide other means than normal church services to provide spiritual guidance to their congregations. Prevention of the close gathering of large groups of people will be one way that the state may attempt to contain the disease. The large numbers of deaths will present special challenges to the churches and to the state's coroners and funeral homes.

The Current Situation

In accordance with the World Health Organization's status of Phase 3 (a new influenza virus subtype is causing disease in humans, but is not yet spreading efficiently and sustainably among humans), SCDHEC continues to prepare for a pandemic by planning for public health response and by working with and assisting other agencies and businesses in their planning efforts.

It is recognized that, in a pandemic, resources in all states will be taxed and South Carolina can not count on support from the outside. Therefore, a focus of current planning activities has been on supporting local efforts to coordinate and identify resources. Non-recurring funding that has been received from the federal government to support pandemic planning requires that the majority of funds be spent to support

regional and county planning. Regional SCDHEC public health preparedness directors, in concert with local emergency management agencies, have hosted pandemic summits, planning meetings and tabletop exercises to test county plans. These are just the first steps. Local planners, representing a cross section of governments, health care entities and businesses, are still working to identify local resources, such as alternate care sites outside of hospital facilities to care for large numbers of sick persons. Many educational programs have been presented locally, and to state level organizations, to provide information about avian influenza and the potential effects of a pandemic, as well as planning for continuity of operations within businesses, schools and health care agencies. Community outreach activities attempt to involve every sector in the planning process.

SCDHEC is encouraging , the monitoring, or surveillance, of seasonal influenza by the healthcare providers in the voluntary influenza surveillance network, to increase surveillance activities, traditionally conducted from October through March, to year round reporting. State laboratory capabilities to identify new influenza viral strains are being increased. SCDHEC's epidemiology staff is developing recommendations for personal protective equipment (PPE) for health care workers, public health staff and the general public. SCDHEC is working with state school officials to determine pandemic events that would trigger the recommendations for school closings.

The State Pandemic Influenza Plan and Antiviral Distribution Plan are being updated, based on the latest planning efforts. SCDHEC regional and county pandemic plans also continue to be updated to include the results of local planning meetings and tabletop exercises. Stockpiles of antiviral medicines are being purchased by the state and federal government.

What Has Been Done to Prepare

In November 2005, the State Bioterrorism Advisory Committee was briefed on the newly released National Pandemic Influenza Plan and expanded to form the state Pandemic Influenza Coordinating Council. Sub-committees on Disease Control, Mass Casualty Planning, Training and Agroterrorism were tasked with specific pandemic preparedness activities. From discussions of the state Pandemic Influenza Coordinating Council, four main strategies were identified for the first phase of improving preparedness for local communities. These are:

1. Regional and local planning summits with follow-on planning meetings to complete local community plans for the counties and major cities and exercise these plans;
2. Regional and local information-sharing meetings and community forums to promote awareness and preparedness in each of the following sectors: local government (counties and cities), education, business and agriculture, health care, faith-based organizations, community organizations, individuals and families.

3. A multi-media public awareness and preparedness campaign to inform and educate people about pandemic influenza prevention and preparedness measures and to alert the public and community leaders of the need to prepare local government and community plans;
4. Targeted multi-media campaigns and technical assistance to promote awareness and preparedness in each of the following sectors: local government (counties and major cities in metropolitan statistical areas), education, business and agriculture, health care, faith-based organizations, community organizations, individuals and families.

Based on public health and hospital preparedness efforts and the findings from the state and regional assessments conducted in April 2006, and repeated in August 2006, three additional strategies include:

5. Establishment of state stockpiles of antiviral medication, personal protective equipment, infection control supplies, medical supplies and equipment for use in a pandemic or other public health emergency. Detailed planning for the efficient distribution of medicines and supplies from state and federal stockpiles.

6. Detailed planning for increasing the capacity of hospitals and medical care to care for a surge in the number of patients by use of alternate care sites and mobile medical resources. Establishment of a health professional volunteer registration system and medical reserve corps program to supplement health care manpower.

7. Expansion of disease surveillance activities and laboratory testing capacity for influenza-like illnesses.

A state Pandemic Summit was held on March 2, 2006. Governor Sanford signed a joint proclamation with Secretary Michael Leavitt of the US Department of Health and Human Services to work together on pandemic preparedness efforts.

In May 2006, SCDHEC received approval of its Phase I Pandemic Influenza application and received $1.5 million in one-time federal funding to support pandemic influenza planning and exercises. Major activities underway include:

- Pandemic influenza emergency operations plans have been written in 45 counties.

- Pandemic summit meetings have been held in all eight public health regions, 45 counties and three cities.

- A total of 45 county exercises and four state level exercises have been held to test and refine pandemic emergency operations plans.

- The state Pandemic Influenza plan has been updated for the 2007 State Emergency Operations Plan.

- A state Public Health Emergency Pharmaceutical Stockpile has been established. Under a federal match program, South Carolina has ordered 325,000 treatment courses of antiviral medicines for influenza, at a total cost of $6.6 million (of which $5 million is state matching funds). The state may purchase up to 435,000 courses under this program, and, if funded, South Carolina will purchase its full allotment. The first shipments of the stockpile medicines are expected to arrive in early 2007.

- An additional 25,000 antiviral treatment courses have been ordered with federal funding for public health response to contain an initial outbreak of pandemic influenza. These medicines are expected to arrive in December 2006.

- In addition, the federal Strategic National Stockpile has allocated 618,000 treatment courses for South Carolina. When the federal allocation and the state stockpile are combined, there will be a sufficient supply to treat up to 25% of the state's population for pandemic influenza.

- Each year, SCDHEC conducts disease surveillance for influenza and influenza-like illnesses. http://www.scdhec.gov/health/disease/acute/flu.htm Disease surveillance activities for influenza-like illness have been stepped up by recruiting additional providers to report.

- Laboratory testing capabilities and capacity have been increased. Laboratory testing is used to confirm the types of influenza circulating and to look for the emergence of novel viruses.

- DHEC maintains a Health Alert Network to quickly provide alerts and detailed information to health care providers about disease outbreaks or important health problems, including influenza.
  http://www.scdhec.gov/health/disease/acute/flualert.htm

- The South Carolina seasonal influenza plan is available at:
  http://www.scdhec.gov/health/disease/immunization/docs/fluplan.pdf
  This plan describes public health activities to prevent and monitor influenza.

- Each year, SCDHEC has a seasonal influenza vaccination campaign to encourage people in high risk groups to get flu shots. The risk for complications, hospitalizations, and deaths from influenza are greater among persons 65 and older, young children, and people with certain chronic diseases including diabetes, asthma and heart disease.

- Pandemic preparedness initiatives are underway for specific sectors: business, schools, government agencies, health care, agriculture, and the faith community to promote awareness, planning and preparedness.

- A Speaker's Bureau has been established to promote widespread public awareness of the possibility of pandemic influenza among community and business leaders. Six "train the trainer" sessions were held at the state level to prepare approximately 300 speakers for pandemic influenza presentations. From September 2005 through September 2006, there were 296 presentations to over 10,440 people.

- The public information campaign, "What Do You Do to Prevent the Flu?" has been developed and began airing on television and radio in October 2006. The purpose is to increase public awareness and knowledge of ways they can prevent the spread of seasonal influenza. The messages promote vaccination, hand washing, cough etiquette, and staying home when sick. These are key messages for seasonal influenza, but are also important messages for a pandemic influenza.

- A contract with South Carolina Educational Television supports the development of educational materials about pandemic influenza and home care, and other key media materials for use now, and in the event of a pandemic.

What More Should Be Done

- **Recurring state funding is needed to support the Public Health Emergency Pharmaceutical Stockpile.** A secure storage area must be built, with the capacity to serve as a receiving and distribution site for the federal Strategic National Stockpile. Ongoing funding is needed to purchase medicines, vaccines and infection control supplies, rotate stock when medicines and vaccines expire, and operate the stockpile facility. The stockpile represents an ongoing program to assure that South Carolina has resources on hand to treat its citizens in the event of a pandemic influenza or other major disease outbreak.

- **The state must be prepared to purchase large quantities of influenza vaccine and to quickly vaccinate large numbers of people.** Human vaccines are being developed for protection against the H5N1 avian influenza virus. At this time, these vaccines are in early development, and are not being manufactured in quantities sufficient for widespread use. Unfortunately, a specific vaccine for a pandemic influenza strain cannot be developed until after the pandemic strain emerges: it might be a different type of influenza than H5N1. In any case, when a vaccine to prevent pandemic influenza is available, South Carolina must be ready to buy it and use it.

- **The public health workforce available to respond to a pandemic or other public health emergency is far smaller now than in 2001.** State and federal budget reductions have resulted in the reduction from 5,729 authorized FTEs in FY 2001-02 to 4,921 in FY 2006-07, a loss of 14% of the Department's total workforce. Increased state funding for public health programs is essential, if the state is to have sufficient public health professionals available to respond to a public health emergency.

- **Reductions in federal funding for public health preparedness are causing instability in the Department's preparedness efforts.** Federal funding for the Centers for Disease Control Public Health Emergency Preparedness program has dropped from $13.9 million in FY 2002-03 to $10.6 in FY 2006-07, a loss of 24% in four years. The program is presently undergoing staffing reductions. One-time federal funding for pandemic influenza preparedness is used to support temporary grant employees for planning and public awareness activities. It cannot be used to sustain public health capacity to respond to an unpredictable event like a pandemic. Sustained, recurring state funding is needed for public health preparedness efforts.

- **The state should consider increased funding for its disaster reserve fund.** An influenza pandemic could result in a major financial crisis for hospitals and health care providers caring for a surge of uninsured or under-insured patients. Impacts on the state's economy, on state agencies and on the educational system may result in reduction of state revenues at a time of increased expenditures. A well-funded state disaster reserve fund would be a prudent measure for coping with unexpected expenses or revenue reductions during a pandemic or other disaster.

The Plan to Improve the State's Readiness Condition

Key objectives in South Carolina's work plans for the Pandemic Influenza, hospital and public health preparedness programs include:

- Improving plans for mass vaccination to prevent the spread of influenza and for distribution of medicines to treat pandemic influenza.

- Planning and preparedness measures for surge capacity and staffing issues for hospitals, primary care and home health care.

- Improving infection control practices, plans and procedures in public health and medical care systems.

- Planning for and developing caches of medicines, vaccines, medical supplies and equipment for use in a pandemic.

- Improving influenza surveillance and information systems for disease reporting, tracking, and disease control response.

- Improving laboratory capacity for influenza testing.

- Promoting registration and training of volunteer health professionals to serve in emergencies.

- Testing plans for use of alternate care sites for medical care of influenza patients.
- Preparing guidelines for school closure and other community disease containment measures and informing the public about isolation, quarantine and disease control measures.
- Raising public awareness of influenza prevention measures and providing information on home care for influenza patients.
- Defining and addressing the needs of high risk and special populations.
- Formalizing interstate mutual assistance agreements and coordination among southeastern states.
- Exercising state and regional pandemic influenza emergency plans to identify and fix gaps.
- Engaging law enforcement personnel in planning and training for response to pandemic influenza.
- Improving plans for responding to mass fatalities.
- Preparing for the psychological consequences of a pandemic that causes widespread illness and mass fatalities.

Conclusion

Significant progress has been made in planning for an influenza pandemic in South Carolina, but much work remains to be done to improve the state's readiness condition. The focus of preparedness efforts during the next year will be on promoting pandemic preparedness planning in the health and medical, business, agriculture, education, and faith community sectors; promoting individual and family awareness of influenza prevention, home care, and preparedness; establishing the state public health emergency pharmaceutical stockpile; strengthening public health disease surveillance and response capabilities; and strengthening medical surge capacity.

The threat of an influenza pandemic is real. There is great uncertainty about when the next pandemic will occur, how serious the disease will be, and how effective the measures to contain the disease will be. Our challenge is to prepare for the worst case and take prudent measures now to protect the health of South Carolinians.

Chronology of Key Events in the H5N1 Avian Influenza Outbreak (from World Health Organization), National Pandemic Influenza Preparedness, and South Carolina's Pandemic Influenza Preparedness	
1997	Outbreaks of highly pathogenic H5N1 avian influenza are reported in poultry at farms and live markets in Hong Kong. Human infections with H5N1 influenza are reported in Hong Kong. Altogether, 18 cases, 6 of them fatal, are reported in this first known instance of human infection with this virus.
April 2000	**SC DHEC prepares a draft response plan for pandemic influenza.**
May 2002	**South Carolina begins major expansion of public health preparedness activities under Centers for Disease Control "Public Health Preparedness and Response for Bioterrorism Program" and Health Resources and Services Administration "Bioterrorism Hospital Preparedness Program."**
February 2003	Two cases of H5N1 in a Hong Kong family, one fatal. A third family member died of respiratory illness, but no samples were taken.
Mid 2003	Animal outbreaks of H5N1 occur in Asia, but go unreported.
July 2003	**DHEC hires an epidemiologist to oversee increased disease surveillance for influenza and respiratory illnesses.**
December 2003	Outbreak in poultry is reported in South Korea.
January 2004	Viet Nam reports H5N1 in poultry. Sporadic human cases of H5N1 are reported, with severe respiratory disease and high fatality rates. Outbreaks in poultry are reported by Japan, Thailand, Cambodia and Laos.
February 2004	Outbreaks in poultry are reported by Indonesia and China.
March 2004	Reports of human cases continue. Confirmed cases include 12 in Thailand, with 8 fatal; and 23 in Viet Nam, 16 fatal.

Fall 2004	Human cases are reported from Viet Nam, Thailand
November 2004	**Pandemic Influenza Plan is officially included in South Carolina State Emergency Operations Plan**
January 2005	Human cases in Viet Nam, Thailand.
February 2005	First human case in Cambodia.
April 2005	Die-off of wild birds at Qinghai Lake in central China.
July 2005	First human case reported in Indonesia. Avian outbreaks in Russia
August 2005	Avian outbreaks in Kazakstan, Tibet, Mongolia.
October 2005	Avian outbreaks in Turkey, Romania, Croatia, China. More human cases confirmed in Indonesia and Thailand.
October 2005	CDC announces successful research to reconstruct the 1918 pandemic influenza virus, concludes that the virus was avain in origin and has some similarities to the H5N1 strain.
November 2005	US Department of Health and Human Services releases National Pandemic Influenza Plan. President Bush announces National Strategy for Pandemic Influenza. China reports first two human cases of H5N1. **South Carolina expands the State Bioterrorism Advisory Committee to serve as the state's Pandemic Influenza Coordinating Council.**
December 2005	National summit meeting of state health officers was held to announce national campaign to prepare for pandemic influenza. US Department of Health and Human Services Secretary announces a fifty-state tour of pandemic influenza summit meetings to increase state preparedness efforts.
January 2006	Turkey and Iraq report first human cases. Poultry outbreaks occur in Turkey.

February 2006	Indonesia continues to report human cases: 25 cases and 18 fatalities. China reports 12 human cases and 8th fatality. H5N1 is confirmed in wild birds in Azerbaijan, Bulgaria, Greece, Italy, Iran, Austria, Germany, France, Hungary, Slovakia, Bosnia-Herzegovina and Georgia and in poultry in Iraq, Nigeria, Russia, Egypt, India, Malasia, France and Niger.
March 2006	First human cases are reported in Azerbaijan and Egypt. H5N1 is confirmed in wild birds in Switzerland, Montenegro, Poland, Denmark, Sweden and the Czech republicand in poultry in Albania, Cameroon, Myanmar, Afganistan, Israel, Pakistan, and Jordan.
March 2006	**South Carolina holds "South Carolina Prepares: Pandemic Influenza State Summit" meeting. Governor Sanford signs proclamation to work with DHHS to prepare for pandemic influenza in South Carolina.**
May 2006	**South Carolina receives Phase I Pandemic Influenza supplemental funds of $1.5 million for planning, exercises and preparedness initiatives.**
May 2006	US Department of Homeland Security releases National Strategy for Pandemic Influenza: Implementation Plan that describes the roles of federal agencies in response to pandemic influenza.

May-October 2006	Human cases of H5N1 influenza continue to occur on a sporadic basis in Indonesia, Egypt, China, Thailand. As of October 16, 2006, World Health Organization reported 256 cases and 151 deaths from 2003 to date. The disease is not yet easily transmitted from person to person. Avian disease continues to be widespread in Asia, Europe and Africa in wild birds, with sporadic outbreaks in domestic poultry. It has not yet reached North America or South America. Extensive monitoring of wildlife and commercial poultry is conducted in the US and Canada to detect H5N1.
June – October 2006	**South Carolina holds regional and county summits to develop county and city pandemic influenza plans and hold exercises. Numerous presentations are made at meetings and conferences to promote planning and preparedness by government agencies, business, schools and faith communities.**
July 2006	**South Carolina sends a letter of intent to participate in the federal match program for purchase of antiviral medicines for a state stockpile.**
August 2006	**Phase II Pandemic Influenza grant proposal submitted to Centers for Disease Control. When approved, South Carolina will receive $3,277,094 for planning, exercises and other pandemic influenza preparedness activities.**

September 2006	**Initial orders are placed for antiviral medicines for South Carolina state stockpile. 325,000 treatment courses were ordered, with anticipated delivery by March 2007.** **Multiple state and federal agencies in South Carolina-Clemson University, Department of Natural Resources, South Carolina Department of Agriculture, US Department of Agriculture Wildlife Services and Veterinary Services and SCDHEC announce increased surveillance for avian influenza in wild birds and domestic flocks.**
October 2006	**The "What Do You Do To Prevent the Flu?" public information campaign was launched at the South Carolina State Fair. Brochures and public service announcements on television and radio promote vaccination, hand washing, cough etiquette and staying home when sick as ways to prevent the spread of seasonal flu. These and additional materials will be used for public information in a pandemic situation.**